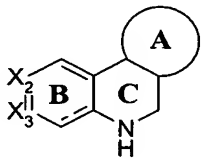
Amendments to the Claims

Please cancel Claims 5, 10, 13,16, 17, 21, 22, 25, 33 and 39. Please amend Claims 6, 9, 11, 15, 20, 24, 26, 32, 34, 38 and 40. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Original) A method of treating a subject for a bacterial infection, comprising administering to a subject in need of treatment for a bacterial infection an effective amount of a compound represented by structural formula **I**:



I

or a pharmaceutically acceptable salt, solvate, or hydrate thereof, wherein:

Ring **A** is a 5 or 6 membered cycloalkyl or cycloalkenyl group, optionally substituted with halogen or optionally halogenated C1-C3 alkyl or alkoxy;

X2 and X3 are each carbon, or one is nitrogen and the other is carbon; and

Rings **B** and **C** are optionally and independently substituted at any substitutable ring carbon, provided that one or two substitutable ring carbons in Rings **B** and **C** are substituted with an acidic group.

2. (Original) The method of Claim 1, wherein the subject is a human.

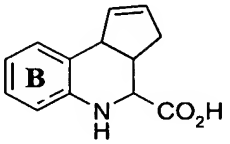
3. (Original) The method of Claim 2, wherein the infection is caused by a bacterium that expresses phosphoenolpyruvate:UDP-N-acetyl-D-glucosamine 1-carboxyvinyltransferase.

4. (Original) The method of Claim 2, wherein the infection is caused by a bacterium of a genus selected Allochromatium, Acinetobacter, Bacillus, Campylobacter, Chlamydia, Chlamydophila, Clostridium, Citrobacter, Escherichia, Enterobacter, Enterococcus, Francisella, Haemophilus, Helicobacter, Klebsiella, Listeria, Moraxella, Mycobacterium, Neisseria, Proteus, Pseudomonas, Salmonella, Serratia, Shigella, Stenotrophomonas, Staphyloccocus, Streptococcus, Synechococcus, Vibrio, and Yersina.

5. (Canceled)

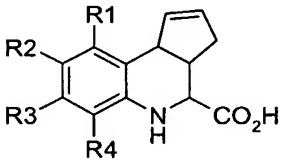
6. (Currently amended) The method of Claim [[5]] 1 wherein the acidic group is selected from -(CO)OH, -(CS)OH, -(SO)OH, $-SO_3H$, $-OSO_3H$, $-P(OR^a)(OH)$, $-(PO)(OR^a)(OH)$, $-O(PO)(OR^a)(OH)$, or $-B(OR^a)(OH)$, wherein R^a is –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl.

7. (Original) The method of Claim 6, wherein the compound is represented by structural formula **I-a**:



I-a

8. (Original) The method of Claim 7, wherein the compound is represented by structural formula **I-a'**:



I-a'

wherein:

R1, R2, R3, and R4 are independently –H, halogen, $-NO_2$, -CN, $-(CO)R^b$, $-(CO)OR^b$, $-(CO)O(CO)R^b$, $-(CS)OR^b$, $-(CS)R^b$, $-(SO)OR^b$, $-SO_3R^b$, $-OSO_3R^b$, $-P(OR^b)_2$, $-(PO)(OR^b)_2$, $-O(PO)(OR^b)_2$, $-B(OR^b)_2$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-SO_2NR^c_2$, $-NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl;

wherein:

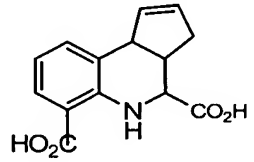
each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

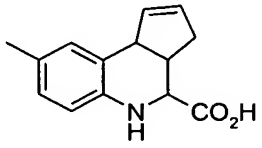
9. (Currently amended) The method of Claim 8 wherein at least two of R1 to R4 are –H; and one or two of R1 to R4 are each independently -F, -Cl, -Br, $-(CO)R^b$, $-(CO)OR^b$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-NR^d(CO)PhNR^d(CO)R^b$, or optionally substituted phenyl, benzyl, pyridyl, methylpyridyl, or optionally halogenated C1 to C4 alkyl or C1 to C4 alkoxy; wherein each R^b, R^c, and R^d is independently –H, or optionally substituted C1 to C4 alkyl or phenyl, or each NR^c_2 is an optionally substituted morpholinyl, piperidyl, or piperazyl.

10. (Canceled)

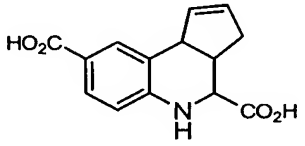
11. (Currently amended) The method of Claim [[10]] 1 wherein the compound is represented by one of the following structural formulas:



II



III



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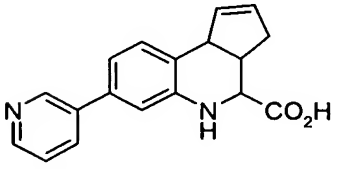

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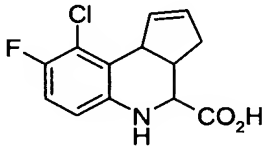
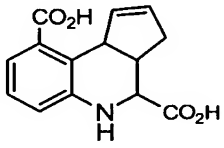
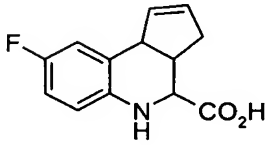


VI



VII



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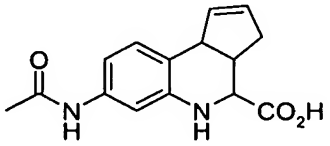

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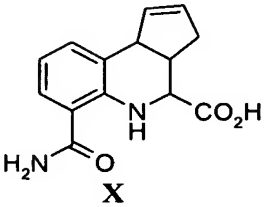

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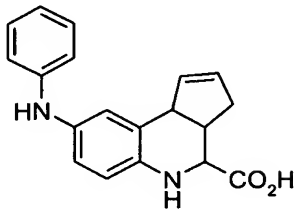

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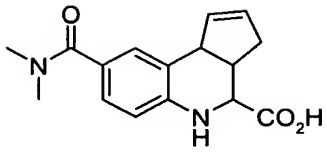

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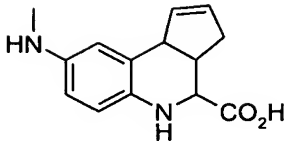

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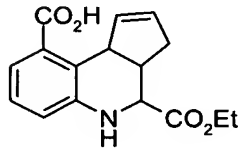

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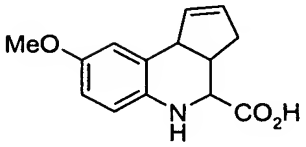

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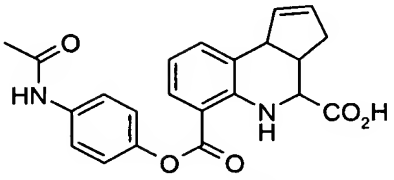

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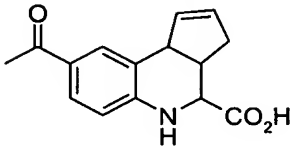

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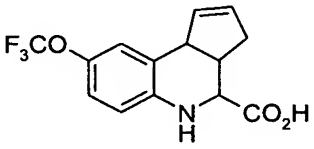

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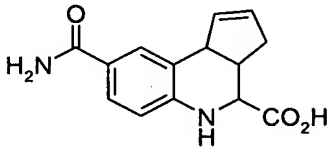

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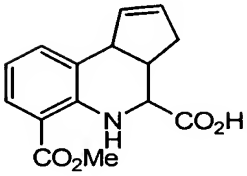
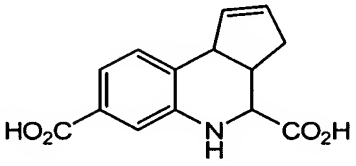
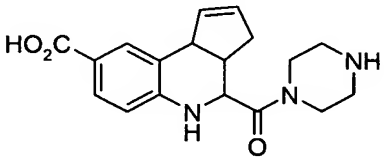


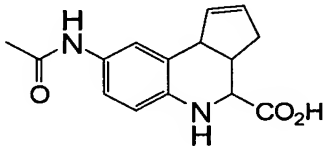
XX



XXI



XXII



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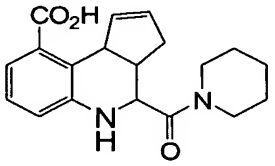
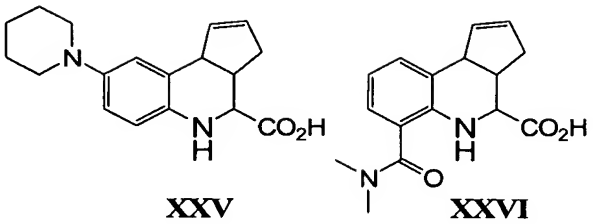
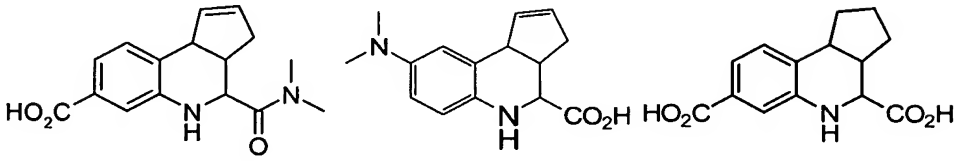


XXIV



XXV XXVI

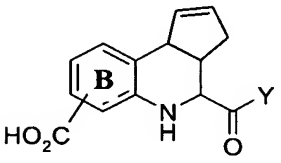


XXVII XXVIII I-m

12. (Original) The method of Claim 8 wherein at least one of R1 to R4 is $-CO_2H$, or a C1 to C4 alkyl ester thereof.

13. (Canceled)

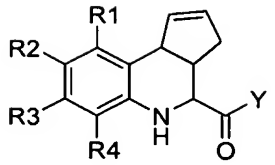
14. (Original) The method of Claim 6, wherein the compound is represented by structural formula **I-b**:



I-b

wherein Y is optionally substituted C1 to C4 alkyl, C1 to C4 alkoxy, phenyl, pyridyl, or $-NR^j_2$, wherein each R^j is independently –H, C1 to C4 alkyl, aryl, or aralkyl, or NR^j_2 is a nonaromatic heterocycle.

15. (Currently amended) The method of Claim 14, wherein the compound is represented by structural formula **I-b'**:



I-b'

wherein:

at least two of R1 to R4 are –H; and

R1, R2, R3, and R4 are independently –H, halogen, $-NO_2$, -CN, $-(CO)R^b$, $-(CO)OR^b$, $-(CO)O(CO)R^b$, $-(CS)OR^b$, $-(CS)R^b$, $-(SO)OR^b$, $-SO_3R^b$, $-OSO_3R^b$, $-P(OR^b)_2$, $-(PO)(OR^b)_2$, $-O(PO)(OR^b)_2$, $-B(OR^b)_2$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-SO_2NR^c_2$, $-NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl, wherein at least one of R1 to R4 is $-CO_2H$; wherein:

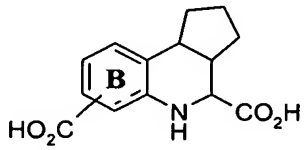
each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

16. (Canceled)

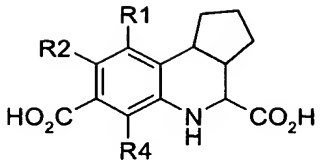
17. (Canceled)

18. (Original) The method of Claim 6, wherein the compound is represented by structural formula **I-c**:



I-c

19. (Original) The method of Claim 18, wherein the compound is represented by structural formula **I-c'**:



I-c'

wherein:

R1, R2, and R4 are independently –H, halogen, -NO_2, -CN, -$(CO)R^b$, -$(CO)OR^b$, -$(CO)O(CO)R^b$, -$(CS)OR^b$, -$(CS)R^b$, -$(SO)OR^b$, -SO_3R^b, -OSO_3R^b, -$P(OR^b)_2$, -$(PO)(OR^b)_2$, -$O(PO)(OR^b)_2$, -$B(OR^b)_2$, –$(CO)NR^c_2$, -NR^c_2, -$NR^d(CO)R^b$, -$NR^d(CO)OR^b$, -$NR^d(CO)NR^c_2$, -$SO_2NR^c_2$, -$NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl;

wherein:

each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

20. (Currently amended) The method of Claim 19, wherein at least two of R1, R2, and R4 are -H; and

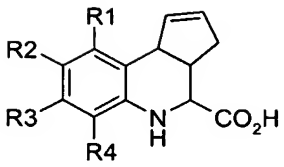
R1, R2, and R4 are independently –H, -F, -Cl, -Br, -NO_2, -CN, -$(CO)R^b$, –$(CO)NR^c_2$, -NR^c_2, -$NR^d(CO)R^b$, -$NR^d(CO)OR^b$, -$NR^d(CO)NR^c_2$, -$SO_2NR^c_2$, -$NR^dSO_2R^b$, or optionally halogenated C1 to C4 hydroxy alkyl, C1 to C4 alkyl, or C1 to C4 alkoxy;

wherein each R^b, R^c and R^d is independently –H or C1 to C4 alkyl; or NR^c_2 is a nonaromatic heterocycle.

21. (Canceled)

22. (Canceled)

23. (Original) A compound represented by structural formula **I-a'**:



I-a'

or a pharmaceutically acceptable salt, solvate, or hydrate thereof, wherein:

R1, R2, R3, and R4 are independently –H, -(CO)R^b, -(CO)OR^b, -(CO)O(CO)R^b, -(CS)OR^b, -(CS)R^b, -(SO)OR^b, -SO_3R^b, -OSO_3R^b, -$P(OR^b)_2$, -(PO)$(OR^b)_2$, -O(PO)$(OR^b)_2$, -$B(OR^b)_2$, -NR^c_2, -NR^d(CO)R^b, -NR^d(CO)OR^b, -NR^d(CO)NR^c_2, -$SO_2NR^c_2$, -$NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, or nonaromatic heterocycle;

wherein:

each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

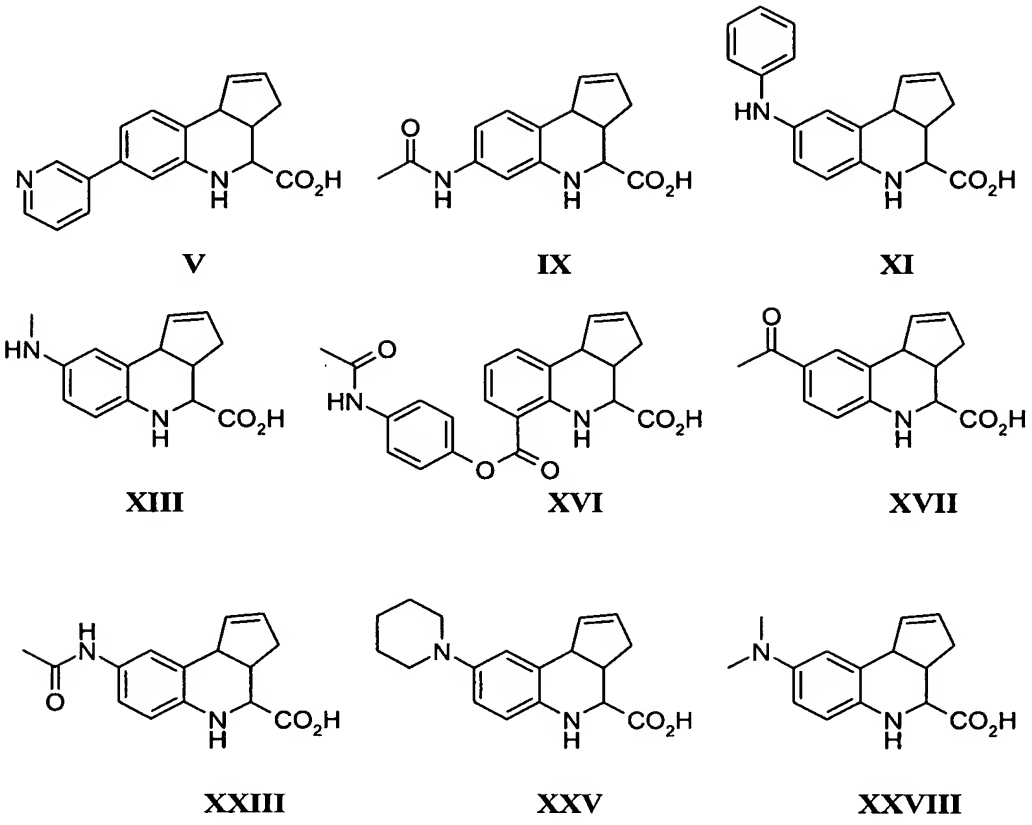
24. (Currently amended) The compound of Claim 23 wherein at least two of R1 to R4 are –H; and

<u>one or two of R1 to R4 are each independently -(CO)R^b, -(CO)OR^b, -(CO)NR^c_2, -NR^c_2, -NR^d(CO)R^b, -NR^d(CO)OR^b, -NR^d(CO)NR^c_2, -NR^d(CO)PhNR^d(CO)R^b, or optionally substituted phenyl, benzyl, pyridyl, or methylpyridyl;</u>

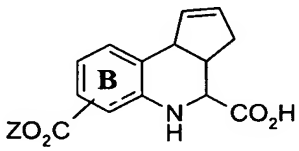
<u>wherein each R^b, R^c, and R^d is independently –H, or optionally substituted C1 to C4 alkyl or phenyl, or each NR^c_2 is an optionally substituted morpholinyl, piperidyl, or piperazyl</u>.

25. (Canceled)

26. (Currently amended) The compound of Claim [[25]] <u>24</u> wherein the compound is represented by one of the following structural formulas:



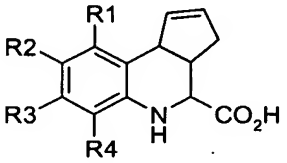
27. (Original) A compound represented by structural formula **I-a"**:



I-a"

or a pharmaceutically acceptable salt, solvate, or hydrate thereof, wherein Ring **B** is optionally substituted at any substitutable ring carbon, and Z is –H or a C1 to C4 alkyl group.

28. (Original) The compound of Claim 27, wherein the compound is represented by structural formula **I-a'**:



I-a'

wherein:

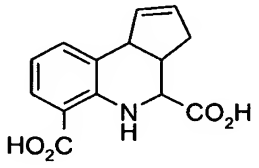
R1, R2, R3, and R4 are independently –H, halogen, -NO_2, -CN, -$(CO)R^b$, -$(CO)OR^b$, -$(CO)O(CO)R^b$, -$(CS)OR^b$, -$(CS)R^b$, -$(SO)OR^b$, -SO_3R^b, -OSO_3R^b, -$P(OR^b)_2$, -$(PO)(OR^b)_2$, -$O(PO)(OR^b)_2$, -$B(OR^b)_2$, –$(CO)NR^c_2$, -NR^c_2, -$NR^d(CO)R^b$, -$NR^d(CO)OR^b$, -$NR^d(CO)NR^c_2$, -$SO_2NR^c_2$, -$NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl, wherein at least one of R1 to R4 is -$(CO)OR^b$;

wherein:

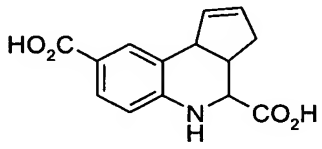
each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

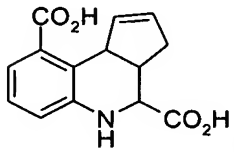
29. (Original) The compound of Claim 28, wherein the compound is represented by one of the following structural formulas:



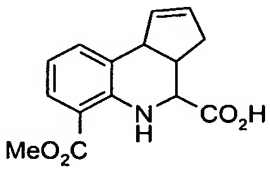
II



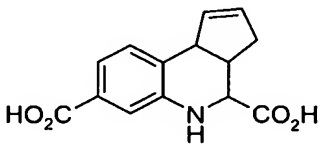
IV



VII

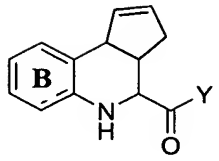


XX



XXI

30. (Original) A compound represented by structural formula **I-b**:



I-b

or a pharmaceutically acceptable salt, solvate, or hydrate thereof, wherein:

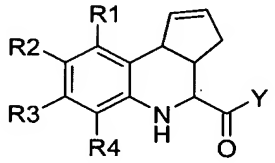
Ring **B** is optionally substituted at any substitutable ring carbon, provided that one or two substitutable ring carbons in Ring **B** are substituted with an acidic group; and

Y is optionally substituted C1 to C4 alkyl, C1 to C4 alkoxy, phenyl, pyridyl, or $-NR^j_2$;

wherein each R^j is independently –H, C1 to C4 alkyl, aryl, or aralkyl, or NR^j_2 is a nonaromatic heterocycle.

31. (Original) The compound of Claim 30 wherein the acidic group is selected from -(CO)OH, -(CS)OH, -(SO)OH, $-SO_3H$, $-OSO_3H$, $-P(OR^a)(OH)$, $-(PO)(OR^a)(OH)$, $-O(PO)(OR^a)(OH)$, or $-B(OR^a)(OH)$, wherein R^a is –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl.

32. (Currently amended) The compound of Claim 31, wherein the compound is represented by structural formula **I-b'**:



I-b'

wherein:

<u>at least two of R1 to R4 are –H; and</u>

R1, R2, R3, and R4 are independently –H, halogen, $-NO_2$, -CN, $-(CO)R^b$, $-(CO)OR^b$, $-(CO)O(CO)R^b$, $-(CS)OR^b$, $-(CS)R^b$, $-(SO)OR^b$, $-SO_3R^b$, $-OSO_3R^b$, $-P(OR^b)_2$, $-(PO)(OR^b)_2$, $-O(PO)(OR^b)_2$, $-B(OR^b)_2$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-SO_2NR^c_2$, $-NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl; provided that at least one of R1 to R4 is $-CO_2H$; wherein

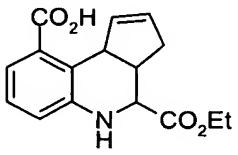
each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

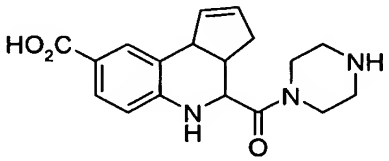
33. (Canceled)

34. (Currently amended) The compound of Claim [[33]] 32 wherein one of R1 to R4 is – CO_2H.

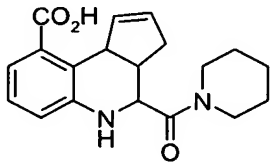
35. (Original) The compound of Claim 34, wherein the compound is represented by one of the following structural formulas:



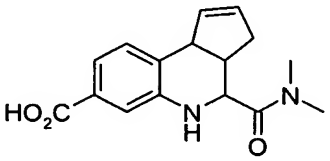
XIV



XXII

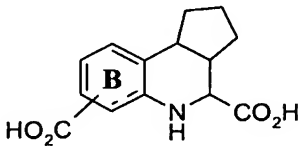


XXIV



XXVII

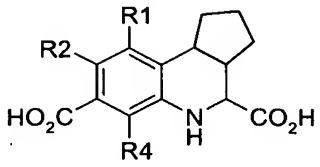
36. (Original) A compound represented by structural formula **I-c**:



I-c

or a pharmaceutically acceptable salt, solvate, or hydrate thereof, wherein Ring **B** is optionally substituted at any substitutable ring carbon.

37. (Original) The compound of Claim 36, wherein the compound is represented by structural formula **I-c'**:



I-c'

wherein:

R1, R2, and R4 are independently –H, halogen, $-NO_2$, -CN, $-(CO)R^b$, $-(CO)OR^b$, $-(CO)O(CO)R^b$, $-(CS)OR^b$, $-(CS)R^b$, $-(SO)OR^b$, $-SO_3R^b$, $-OSO_3R^b$, $-P(OR^b)_2$, $-(PO)(OR^b)_2$, $-O(PO)(OR^b)_2$, $-B(OR^b)_2$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-SO_2NR^c_2$, $-NR^dSO_2R^b$, or an optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, C3 to C7 cycloalkyl, nonaromatic heterocycle, C1 to C4 alkyl, C1 to C4 alkoxy, C1 to C4 hydroxy alkyl, or C2 to C6 alkoxyalkyl;

wherein:

each R^b and R^d is independently –H or optionally substituted aryl, aralkyl, heteroaryl, heteroaralkyl, or C1 to C4 alkyl; and

each R^c is independently –H or optionally substituted C1 to C4 alkyl, aryl, or aralkyl, or NR^c_2 is an optionally substituted nonaromatic heterocycle.

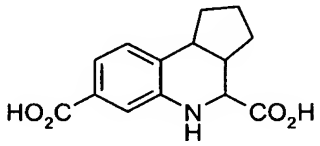
38. (Currently amended) The compound of Claim 37, wherein <u>two of R1, R2, and R4 are –H; and</u>

R1, R2, and R4 are independently –H, -F, -Cl, -Br, $-NO_2$, -CN, $-(CO)R^b$, $-(CO)NR^c_2$, $-NR^c_2$, $-NR^d(CO)R^b$, $-NR^d(CO)OR^b$, $-NR^d(CO)NR^c_2$, $-SO_2NR^c_2$, $-NR^dSO_2R^b$, or optionally halogenated C1 to C4 hydroxy alkyl, C1 to C4 alkyl, or C1 to C4 alkoxy;

wherein each R^b, R^c and R^d is independently –H or C1 to C4 alkyl; or NR^c_2 is a nonaromatic heterocycle.

39. (Canceled)

40. (Currently amended) The compound of Claim [[39]] 38 wherein the compound is represented by structural formula **I-m**:



I-m

41. (Original) A method of identifying a MurA inhibitor, comprising:

contacting MurA with phosphoenolpyruvate and a test compound;

determining a reaction rate between the phosphoenolpyruvate and MurA;

and

identifying the test compound as a MurA inhibitor when the rate of reaction in the presence of the test compound is less than a reaction rate in the absence of the test compound.

42. (Original) The method of Claim 41, further comprising conducting the reaction in the presence of MurB and uridine 5'-diphospho-N-acetylglucosamine.